



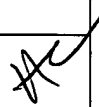
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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|---|-------------|----------------------|--------------------------|------------------|
| 10/653,903  | 09/04/2003  | Young-Bok Ju         | 1349.1284                | 3785             |
| 21171   | 7590        | 12/01/2004           | EXAMINER                 |                  |
| STAAS & HALSEY LLP<br>SUITE 700<br>1201 NEW YORK AVENUE, N.W.<br>WASHINGTON, DC 20005 |             |                      | STEPHENS, JUANITA DIONNE |                  |
|   |             |                      | ART UNIT                 | PAPER NUMBER     |
|   |             |                      | 2853                     |                  |

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |  |                                  |   |
|------------------------------|--|----------------------------------|---|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/653,903   | <b>Applicant(s)</b><br>JU ET AL. |   |
|                              | <b>Examiner</b><br>Juanita D. Stephens | <b>Art Unit</b><br>2853          |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Application filed 9/4/03.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,6-9 and 11-16 is/are rejected.
- 7) ☒ Claim(s) 2,4,5 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Specification*

2. The disclosure is objected to because of the following informalities:

On page 1, paragraph [0002], line 1 replace "injection" with –ejection", and line 3 replace "injected" with –ejected--.

On page 1, paragraph [0003], line 1 replace "injection" with –ejection", and "injecting" with –ejecting--; line 3 replace "injection" with –ejection--.

On page 1, paragraph [0005], line 3 replace "injection" with –ejection", and line 8 replace "injection" with –ejection--.

On page 2, paragraph [0006], line 1 replace "injection" with –ejection", line 5 replace "injection" with –ejection--, line 6 replace "injection" with –ejection--, and line 7 replace "injection" with –ejection--.

On page 2, paragraph [0008], line 2 replace "injection" with –ejection", and line 4 replace "injection" with –ejection--.

On page 2, paragraph [0010], line 3 replace "injection" with –ejection".

On page 3, paragraph [0013], line 2 replace "injection" with –ejection", line 3 replace "injection" with –ejection--, line 4 replace "inject" with –eject--, and line 8 replace "injection" with –ejection--.

On page 4, paragraph [0017], line 4 replace "injection" with –ejection", line 5 replace "injection" with –ejection--, and line 7 replace "injection" with –ejection--.

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On page 4, paragraph [0019], line 3 replace "injection" with –ejection", and line 5 replace "injection" with –ejection--.

On page 4, paragraph [0020], line 4 replace "injecting" with –ejecting".

On page 5, paragraph [0023], line 2 replace "injection" with –ejection".

On page 5, paragraph [0024], line 4 replace "injection" with –ejection".

On page 5, paragraph [0025], line 2 replace "injection" with –ejection".

On page 5, paragraph [0026], line 1 replace "injection" with –ejection".

On page 7, paragraph [0031], line 2 replace "injection" with –ejection", and replace "injected" with –ejected--.

Appropriate correction is required.

3. The abstract of the disclosure is objected to because:

On page 11, lines 1 and 3 replace "injection" with –ejection".

Correction is required. See MPEP § 608.01(b).

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. Also, with respect to the title, replace "INJECTION" with –EJECTION--.

### ***Claim Objections***

5. Claims 1-16 are objected to because of the following informalities:

In claim 1, lines 1 and 4 replace "injection" with –ejection--.

In claim 8, lines 1, 4, and 9 replace "injection" with –ejection--. Also, on line 5 replace "inject" with –eject--.

In claim 13, lines 1 and 4 replace "injection" with –ejection--. Also, on line 7 replace "injected" with –ejected--.

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In claim 15, line 1 replace "injection" with --ejected--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 13 is re rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. (US 5,049,904).

Nakamura et al. discloses a printer having an ink injection heater comprising : 1) a cartridge receiving part (holder 10, shown on Fig. 1) to receive an ink cartridge (20 and 30) therein and outputting an install detection signal (col 4, lns 40-44), 2) a controlling part that determines an optimal width of a pulse inputted to the ink injection heater in response to receiving the install detection signal (col 4, ln 54-col 5, ln 1), and 3) wherein the optimal width of the pulse is set according to each head so that ink is injected uniformly (col 4, ln 54-col 5, ln 1).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

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said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 5,049,904) in view of Wen (US 6,312,078 B1).

Nakamura et al. discloses a printer having an ink injection heater comprising : 1) a cartridge receiving part (holder 10, shown on Fig. 1) to receive an ink cartridge (20 and 30) therein and outputting an install detection signal (col 4, lns 40-44), 2) a controlling part that determines an optimal width of a pulse inputted to the ink injection heater in response to receiving the install detection signal (col 4, ln 54-col 5, ln 1), and 3) wherein the optimal width of the pulse is set according to each head so that ink is injected uniformly (col 4, ln 54-col 5, ln 1). Nakamura et al. does not disclose a memory, wherein the optimal width of the pulse is stored in the memory, and a printing operation is performed with reference to the stored optimal width of the pulse. Wen et al. at least teaches a memory, wherein the optimal width of the pulse is stored in the memory, and a printing operation is performed with reference to the stored optimal width of the pulse (col 14, lns 49-67). It would have been obvious at the time the invention was made to a person having ordinary skill in the inkjet art to modify Nakamura by providing the memory, wherein the optimal width of the pulse is stored in the memory, and a printing operation is performed with reference to the stored optimal width of the pulse for the purpose of obtaining uniform print density.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 3, 6-9, 11-12, and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (US 5,049,904) in view of Wen (US 6,312,078 B1).

Nakamura et al. discloses a method of controlling an inkjet print having an ink injection head, a controlling device for an inkjet printer having an ink injection head and a system comprising: 1) a cartridge receiving part (holder 10, shown on Fig. 1) installing an ink cartridge (cartridges 20 and 30) therein and outputting an install detection signal (col 4, lns 40-44), 2) wherein a standby status is maintained when a cartridge install detection signal is not inputted (col 5, lns 61-65), 3) wherein the sensor (photosensor 50) is disposed under the ink cartridge (as shown on Figs. 4 and 5), and 4) a driving part driving the ink injection heater, in accordance with an external input control signal to inject ink in the ink cartridge while performing a printing operation (col 5, lns 27-49). Nakamura further at least teaches optionally selecting two kinds of print head cartridges (thermal type print head cartridge and an inkjet type print head cartridge) to be mounted on the cartridge holder, wherein the sensor outputs a signal of identifying which one of the print head cartridges is mounted, and wherein receiving the signal, the electronic circuit supplies to the print head cartridge pulse currents wherein the pulse width is varied in accordance with the type of print head cartridge mounted on the cartridge holder.

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Nakamura et al. does not disclose 1) a sensor detecting printing densities of patterns printed on printing media by the printing operation driven by the driving part, 2) a controlling part controlling the driving part so that pulses with width that vary in sequential order by a predetermined width difference are applied to the ink injection heater to print patterns corresponding to the pattern with an optimal density by comparing the printing densities outputted from the sensor, 3) a memory storing the width of the pulse corresponding to the pattern with the optimal density determined by the controlling part, 4) wherein the width of the pulses in sequential order comprise pulses with widths descending by the predetermined width difference from a reference pulse, and pulses with widths ascending by the predetermined width difference from the reference pulse, and 5) wherein the controlling part controls the driving part to perform the printing operation according to the width of the pulse stored in the memory upon inputting a printing command. Wen et al. at least teaches a sensor (densitometer not shown) detecting printing densities of patterns (test image 180) printed on printing media by the printing operation driven by the driving part (col10, Ins 7-19), a controlling part controlling the driving part so that pulses with width that vary in sequential order by a predetermined width difference are applied to the ink injection heater to print patterns corresponding to the pattern with an optimal density by comparing the printing densities outputted from the sensor (col 10, Ins 23-25), a memory storing the width of the pulse corresponding to the pattern with the optimal density determined by the controlling part (col 14, Ins 49-67), wherein the width of the pulses in sequential order comprise pulses with widths



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descending by the predetermined width difference from a reference pulse, and pulses with widths ascending by the predetermined width difference from the reference pulse, and wherein the controlling part controls the driving part to perform the printing operation according to the width of the pulse stored in the memory upon inputting a printing command (col 14, ln 49-col 15, ln 15). It would have been obvious at the time the invention was made to a person having ordinary skill in the inkjet art to modify Nakamura et al. with the sensor detecting printing densities of patterns printed on printing media by the printing operation driven by the driving part, a controlling part controlling the driving part so that pulses with width that vary in sequential order by a predetermined width difference are applied to the ink injection heater to print patterns corresponding to the pattern with an optimal density by comparing the printing densities outputted from the sensor, a memory storing the width of the pulse corresponding to the pattern with the optimal density determined by the controlling part, wherein the width of the pulses in sequential order comprise pulses with widths descending by the predetermined width difference from a reference pulse, and pulses with widths ascending by the predetermined width difference from the reference pulse, and wherein the controlling part controls the driving part to perform the printing operation according to the width of the pulse stored in the memory upon inputting a printing command as taught to be old by Wen for the purpose of obtaining uniform print density.

***Allowable Subject Matter***

12. Claims 2, 4, 5, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 5 will be allowable when claim 2 is rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

The combination of wherein the determining the pattern with the optimal density comprises: comparing the printing densities of each of the printed patterns, after the first printed pattern, with that of the respective previous printed pattern, storing the width of the pulse corresponding to the current density in response to the current density being larger, by a predetermined difference, than the previous density, and storing the width of the pulse corresponding to the previous density in response to the current density not being larger, by the predetermined difference, than the previous density, recited in claim 2. This invention solves the problem of removing a variation due to different ink cartridge heads by setting an optimal width of a pulse, depending on each head, thus providing a uniform amount of ink injection, which improves the printing quality.

The limitation of wherein the reference pulse has a mean width of the array of predetermined pulses, recited in claim 4. This invention solves the problem of removing a variation due to different ink cartridge heads by setting an

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optimal width of a pulse, depending on each head, thus providing a uniform amount of ink injection, which improves the printing quality.

The combination of wherein the controlling part compares the densities of the patterns in ascending order to determine, as an optimal pulse width, the width of the pulse corresponding to the pattern which has the highest density that is larger, by a predetermined difference, than the density of the previous pattern, recited in claim 10. This invention solves the problem of removing a variation due to different ink cartridge heads by setting an optimal width of a pulse, depending on each head, thus providing a uniform amount of ink injection, which improves the printing quality.

#### **Contact Information**

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juanita D. Stephens whose telephone number is (571) 272-2153. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Juanita D. Stephens". The signature is fluid and cursive, with the first name being the most prominent.

Juanita D. Stephens  
Primary Examiner  
Art Unit 2853

November 30, 2004